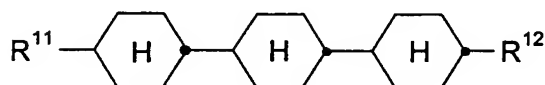


### Patent Claims

1. A liquid-crystal mixture comprising a compound of formula I

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I

wherein

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$R^{11}$  is an alkenyl or alkenyloxy radical having 2 to 7 carbon atoms;  
and

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$R^{12}$  is an alkyl or alkoxy radical having 1 to 12 carbon atoms or an  
alkenyl or alkenyloxy radical having 2 to 12 carbon atoms, in  
which optionally, one or more  $\text{CH}_2$  groups are replaced by  $-\text{O}-$ ,  
 $-\text{S}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{CO}-$ ,  $-\text{OCO}-$  or  $-\text{COO}-$  in such a way that  
heteroatoms are not linked directly to one another.

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2. A liquid-crystal mixture according to claim 1, wherein  
 $R^{11}$  is an alkenyl radical having 2 to 7 carbon atoms; and  
 $R^{12}$  is an alkenyl radical having 2 to 7 carbon atoms.

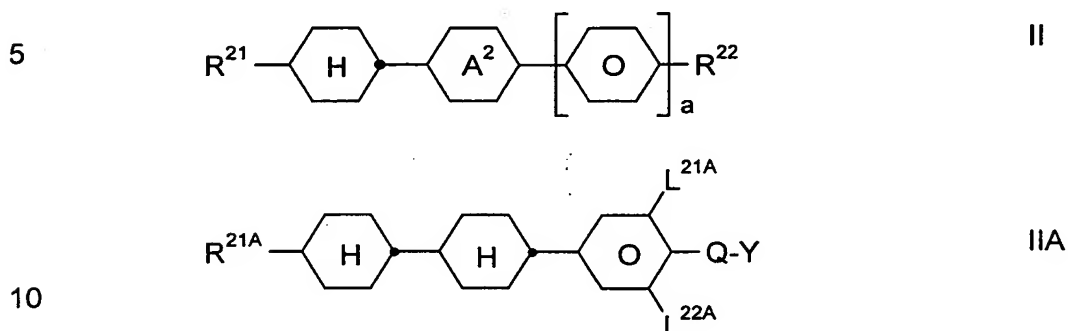
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3. A liquid-crystal mixture according to claim 1, wherein  
 $R^{11}$  is  $\text{CH}_2=\text{CH}-$  or  $\text{CH}_3-\text{CH}=\text{CH}-$ ; and  
 $R^{12}$  is  $\text{CH}_2=\text{CH}-$  or  $\text{CH}_3-\text{CH}=\text{CH}-$ .

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4. A liquid-crystal mixture according to claim 1, wherein the compound of  
the formula I is present in the liquid-crystal mixture in an amount of 1  
to 25% by weight.

5. A liquid-crystal mixture according to claim 1, further comprising a compound of formula II and/or of the formula IIA:



wherein

$R^{21}$  is an alkenyl or alkenyloxy radical having 2 to 7 carbon atoms;

$R^{21A}$  is an alkenyl radical having 2 to 7 carbon atoms;

$R^{22}$  is an alkyl or alkoxy radical having 1 to 12 carbon atoms or an alkenyl or alkenyloxy radical having 2 to 12 carbon atoms, in which optionally, one or more  $\text{CH}_2$  groups are replaced by  $-\text{O}-$ ,  $-\text{S}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{CO}-$ ,  $-\text{OCO}-$  or  $-\text{COO}-$  in such a way that

heteroatoms are not linked directly to one another;

the ring  $\text{A}^2$  is 1,4-phenylene or trans-1,4-cyclohexylene;

$a$  is 0 or 1;

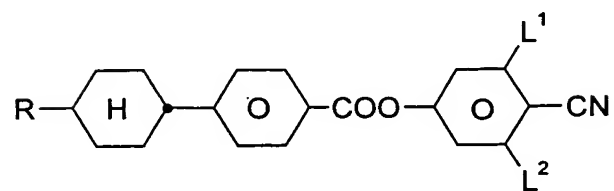
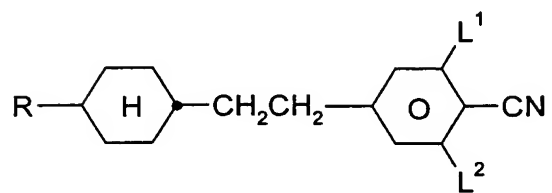
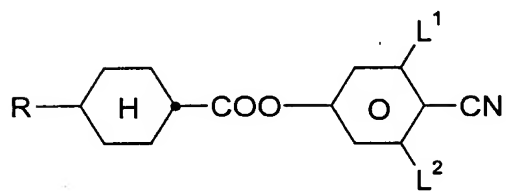
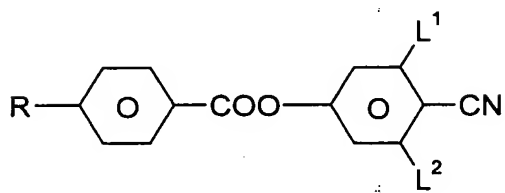
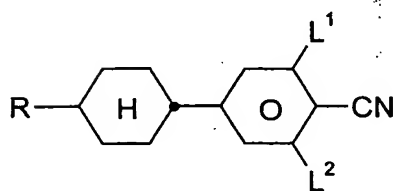
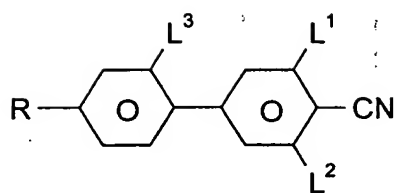
$\text{Q}$  is  $\text{CF}_2$ ,  $\text{OCF}_2$ ,  $\text{CFH}$ ,  $\text{OCFH}$  or a single bond;

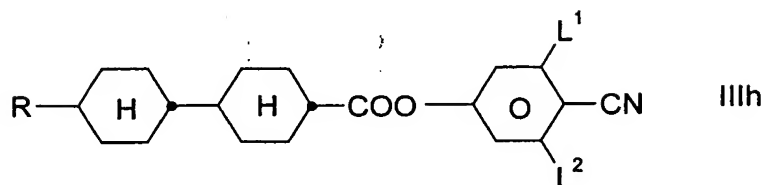
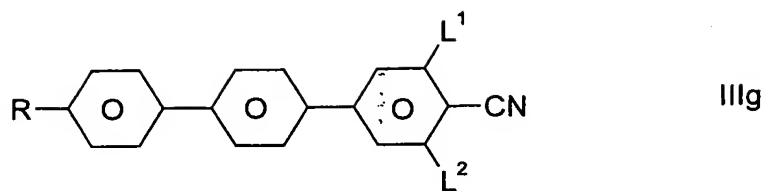
$\text{Y}$  is F or Cl; and

$\text{L}^{21A}$  and  $\text{L}^{22A}$  are each, independently of one another, H or F;

wherein at least one of radicals  $R^{21}$  and  $R^{22}$  is an alkenyl radical.

6. A liquid-crystal mixture according to claim 1, further comprising a compound of formulae IIIa to IIIh:



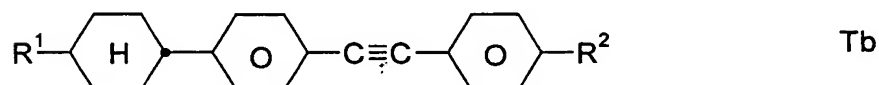
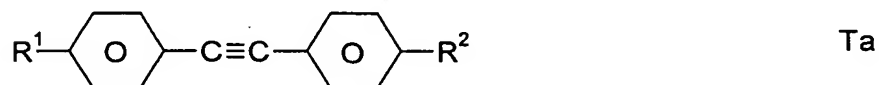


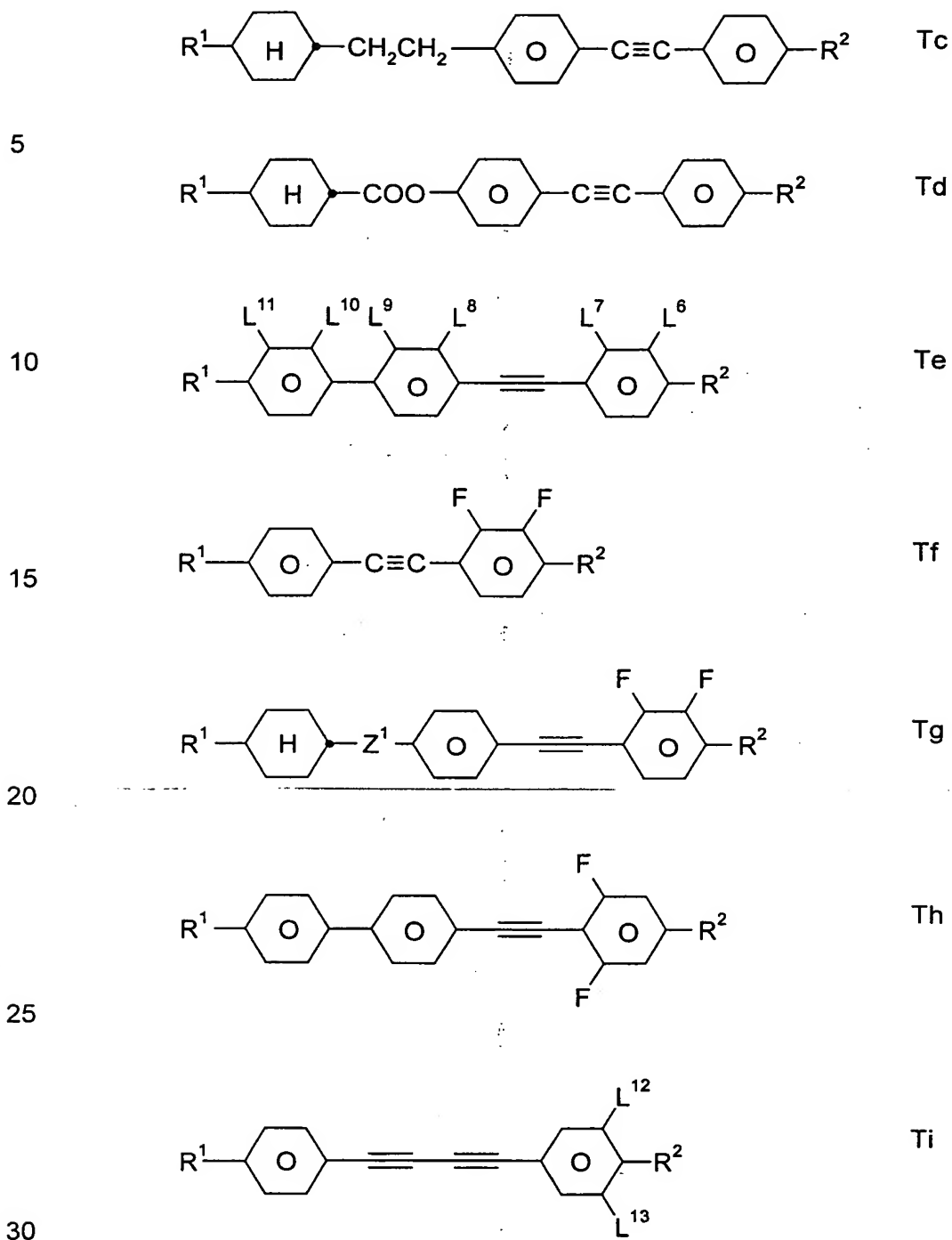
wherein

R is an alkyl or alkoxy radical having 1 to 12 carbon atoms or an alkenyl radical having 2 to 12 carbon atoms, in which optionally one or more  $\text{CH}_2$  groups are replaced by -O-, -S-,  $-\text{C}\equiv\text{C}-$ , -CO-, -OCO- or -COO- in such a way that heteroatoms are not linked directly to one another; and

$\text{L}^1$ ,  $\text{L}^2$  and  $\text{L}^3$  are each, independently of one another, H or F.

7. A liquid-crystal mixture according to claim 6, wherein the liquid-crystal mixture comprises a compound of formula IIIb or IIIc.
8. A liquid-crystal mixture according to claim 1, further comprising a tolan compound of formula Ta to Ti:





wherein

R<sup>1</sup> and R<sup>2</sup> are, independently of one another, an alkyl or alkoxy radical having 1 to 12 carbon atoms or an alkenyl radical having 2 to 12 carbon atoms, in which optionally one or more CH<sub>2</sub> groups are replaced by -O-, -S-, -C≡C-, -CO-, -OCO- or -COO- in such a way that heteroatoms are not linked directly to one another;

Z<sup>1</sup> is -CO-O-, -CH<sub>2</sub>CH<sub>2</sub>- or a single bond; and

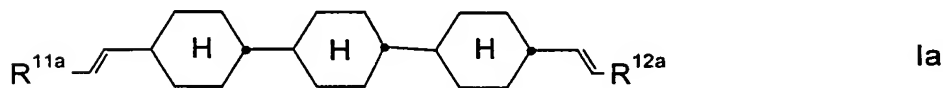
L<sup>6</sup> to L<sup>13</sup> are each, independently of one another, H or F.

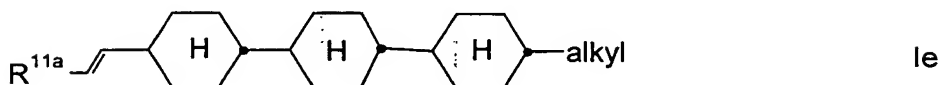
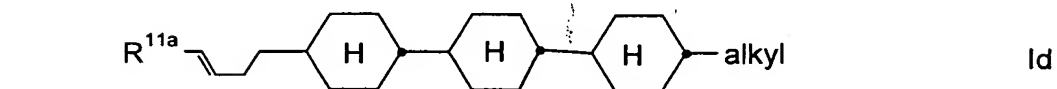
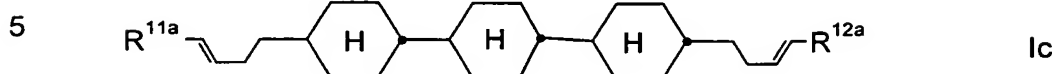
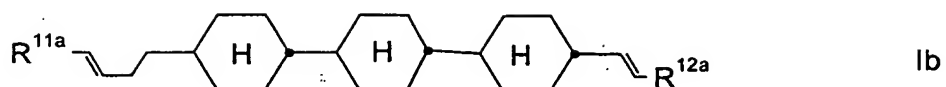
9. A liquid-crystal display containing a liquid-crystal mixture according to claim 1.
10. A TN or STN liquid-crystal display comprising
- two outer plates, which, together with a frame, form a cell,
  - a nematic liquid-crystal mixture of positive dielectric anisotropy located in the cell,
  - electrode layers with alignment layers on the insides of the outer plates,
  - a tilt angle between the longitudinal axis of the molecules at the surface of the outer plates and the outer plates of from 0 degree to 30 degrees,
  - a twist angle of the liquid-crystal mixture in the cell from alignment layer to alignment layer with a value of between 22.5° and 600°,
  - a nematic liquid-crystal mixture comprising
    - a) 15 – 80% by weight of a liquid-crystalline component A consisting of one or more compounds having a dielectric anisotropy of greater than +1.5;
    - b) 20 – 85% by weight of a liquid-crystalline component B consisting of one or more compounds having a dielectric anisotropy of between -1.5 and +1.5;

- c) 0 – 20% by weight of a liquid-crystalline component D consisting of one or more compounds having a dielectric anisotropy of below -1.5, and
- d) optionally, an optically active component C in such an amount that the ratio between the layer thickness and the natural pitch of the chiral nematic liquid-crystal mixture is from about 0.2 to 1.3,

wherein the nematic liquid-crystal mixture is according to claim 1.

11. A cholesteric liquid-crystal display, SSCT or PSCT display comprising one or more chiral dopants and a liquid-crystal mixture according to claim 1.
12. A liquid-crystal mixture according to claim 1, wherein the compound of the formula I is present in the liquid-crystal mixture in an amount of 2 to 20% by weight.
13. A liquid-crystal mixture according to claim 1, wherein the compound of the formula I is present in the liquid-crystal mixture in an amount of 3 to 15% by weight.
14. A liquid-crystal mixture according to claim 1, comprising a compound of formula Ia, Ib, Ic, Id, or Ie:





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 in which  $R^{11a}$  and  $R^{12a}$  are each, independently of one another, H,  $CH_3$ ,  $C_2H_5$  or  $n-C_3H_7$ , and alkyl is an alkyl group having from 1 to 8 carbon atoms.

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 15. A liquid-crystal mixture according to claim 14, comprising a compound of formula 1a or 1e.

16. A liquid-crystal mixture according to claim 15, wherein  $R^{11a}$  and  $R^{12a}$  are, each independently H or  $CH_3$ .

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